Designing Space for Innovation

Innovation is defined by novelty and usefulness. Creativity is the process of coming up with new and useful ideas, and innovation is the process of making those ideas a reality for others. While artificial intelligence (AI) may be improving, it's humans that come up with new and useful ideas, using neural networks that span the whole brain—and social networks that extend beyond discrete project teams and even companies.

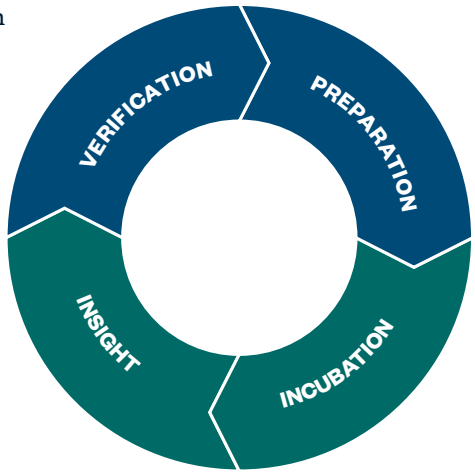
We have found two very different human behaviors optimize creative thinking for innovation processes: high-focus work and restorative activities. To be innovative, employees need to experience these in repetition, on their own, and with others. Organizations that design the workplace with these activities in mind can cultivate the creativity necessary for individuals and teams to spark winning ideas and improve innovation that optimize performance.

The Innovation Cycle

- **Idea generation:** A person uses what they already know combined with new knowledge to generate new ideas.
- **Collaboration:** Those ideas are shared with others.
- **Validation:** Together, they determine if those new ideas are, in fact, new and also useful to a market.
- **Implementation:** If the ideas are new and useful, together, they make those ideas a reality as new physical products or new ways of doing things.
- **Sharing:** Successes and lessons learned from failures are shared and add to knowledge—and the process comes full circle.

The Neuroscience Behind Creativity

1. Preparation
2. Incubation
3. Insight
4. Verification



Source: Haworth White Paper, Optimizing the Workplace for Innovation: Using Brain Science for Smart Design, 2017

There are four stages of cognition involved in coming up with creative ideas. Cycling among these stages forms a continuous feedback loop, to generate novel ideas and evaluate those ideas until ideas are fully formed and vetted. Without spending time in all four stages of cognition—sometimes alone, sometimes with others—there is failure to generate truly creative ideas. Luckily, given the right conditions, these stages unfold fairly naturally. And, by developing expertise, following the right work habits, and knowing how to combine ideas and select good ones, people get better at the process.

To home in on the right work habits, it helps to understand the cognition behind creativity:

Preparation and **verification** involve convergent thinking performed by the brain's executive control network. Convergent thinking, or goal-directed thinking, is needed for completing tasks, developing expertise, gathering information, and making decisions.

Incubation and **insight** involve divergent thinking performed by the brain's default (or imagination) network. Divergent thinking is needed for integrating new information with prior knowledge, making new connections across concepts, and recognizing a novel way that information can be related/understood (the "aha" moment).

Throughout the creative process, the brain's salience network acts as a gatekeeper for internal and external stimuli, passing information to the executive and default networks it thinks might be useful to whatever stage of the creative process we are in at that moment.

This is why it can be so difficult to complete the preparation and verification stages in environments where we can't control our exposure to external stimuli. We keep getting distracted because our salience networks are set up to bring external stimuli to our conscious awareness when our executive neural networks are engaged.

The same thing goes for completing the incubation and insight stages in highly-structured, low-stimulus environments. These environments make it hard for individuals to relax and let the default neural network take over. There's a reason people experience "aha" moments in the shower, driving down the road, or even sleeping. These relaxed, routine activities allow the salience network to filter out external stimuli and give imaginations free rein to roam.

Group Creativity Mirrors Individual Creativity

Interestingly, when people in groups need to be creative, individual cognition becomes externalized or "distributed." Periods of preparation or group learning require the whole group to focus; periods of incubation that lead to insights often happen during breaks or social activities; vetting those insights requires the whole group to focus once again.

Creative Rhythm and Peak Performance

Creative cognition requires both focus and rest. How fast a person cycles between these modes depends on many factors. One popular study showed that the most productive employees (top 10%), on average, took a 15-minute break after working for about an hour. At other times, the creative rhythm can be quite fast—even to the point that we can't tell which mode we're in.

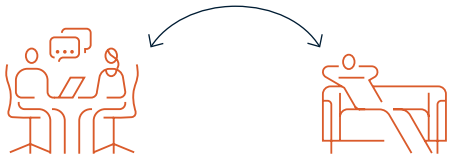
When absorbing information, generating ideas, and refining them all at once—and it feels effortless—employees are in the "in-between" space between high focus and rest. Whole brains are involved, convergent and divergent thoughts are happening simultaneously, and executive and default neural networks are cooperating instead of competing. Known as peak performance, or "flow," this state is still being studied by researchers. But for now, there's some evidence that just the right amount of "buzz" or activity combined with the intention to do some mind wandering can help facilitate the ability to maintain enough focus and actively enlist the imagination.

For Individual Creativity

In addition to designing for high focus and rest, consider the importance of how people need to transition between these—sometimes staying in those transition spaces to capitalize on just enough privacy for focusing, combined with just enough spontaneous activity to engage the imagination.

For Group Creativity

When designing for groups, consider what might help establish distributed cognition at each stage of the creative process—from external stimuli that all members of the group experience together (like background music) to whiteboards or messaging apps that allow group members to share ideas in real-time.



Time and space for collaborative efforts with others

Recharging spaces for groups and individuals

Source: Haworth White Paper, Optimizing the Workplace for Innovation: Using Brain Science for Smart Design, 2017

Culture is Equally Important

In addition to supporting individual and group creativity through smart workplace design, most innovative companies also invest in cultivating an innovative organizational culture. The structural and social norms of such a culture set the stage for innovation by empowering employees to coordinate their creative efforts.

To promote a culture of innovation:

- **Create a safe collaborative space** – This means providing psychological safety by valuing failure as a learning experience, and seeking and respecting diverse perspectives.
- **Move to the margins** – When a large team of people shares ideas, there's always a danger of moving to the middle. Keep challenging yourself and your teams to go beyond expected boundaries.
- **Cultivate diversity** – Diverse teams outperform teams that are more homogenous. Spending time with people unlike ourselves can help us fill in blind spots, jolt us out of cognitive ruts, and give us the information we need to come up with something new—or take a good idea to great.
- **Create teams of experts** – Evidence indicates that smaller, flatter teams with deep collective expertise across a variety of functions and industries are excellent for sparking and advancing innovation.
- **Stop low-value processes** – Stopping things is hard. It involves feelings of loss, disappointment, and failure. But sometimes stopping things is necessary to make room for starting something new.
- **Build in "down" time** – High-pressure timelines can block creativity by short-circuiting the incubation and insight stages of the creative process. Be sure to build unstructured time into project timelines—for spontaneous interactions, making transitions, and noodling over potential concepts.

Setting the Stage for Peak Performance

The right culture along with time and space for both focus and rest are needed to foster convergent and divergent thinking to support the creative process and innovation. Design considerations should address privacy, structure of activity, and user control. Including a variety of spaces offers the freedom to choose which space best supports the activities of the moment, whether at work, at home, or in third places.

Want to learn more?
For more information on how designing spaces for the innovation cycle can turbocharge creativity and innovation in your company, please contact your local Haworth sales representative.